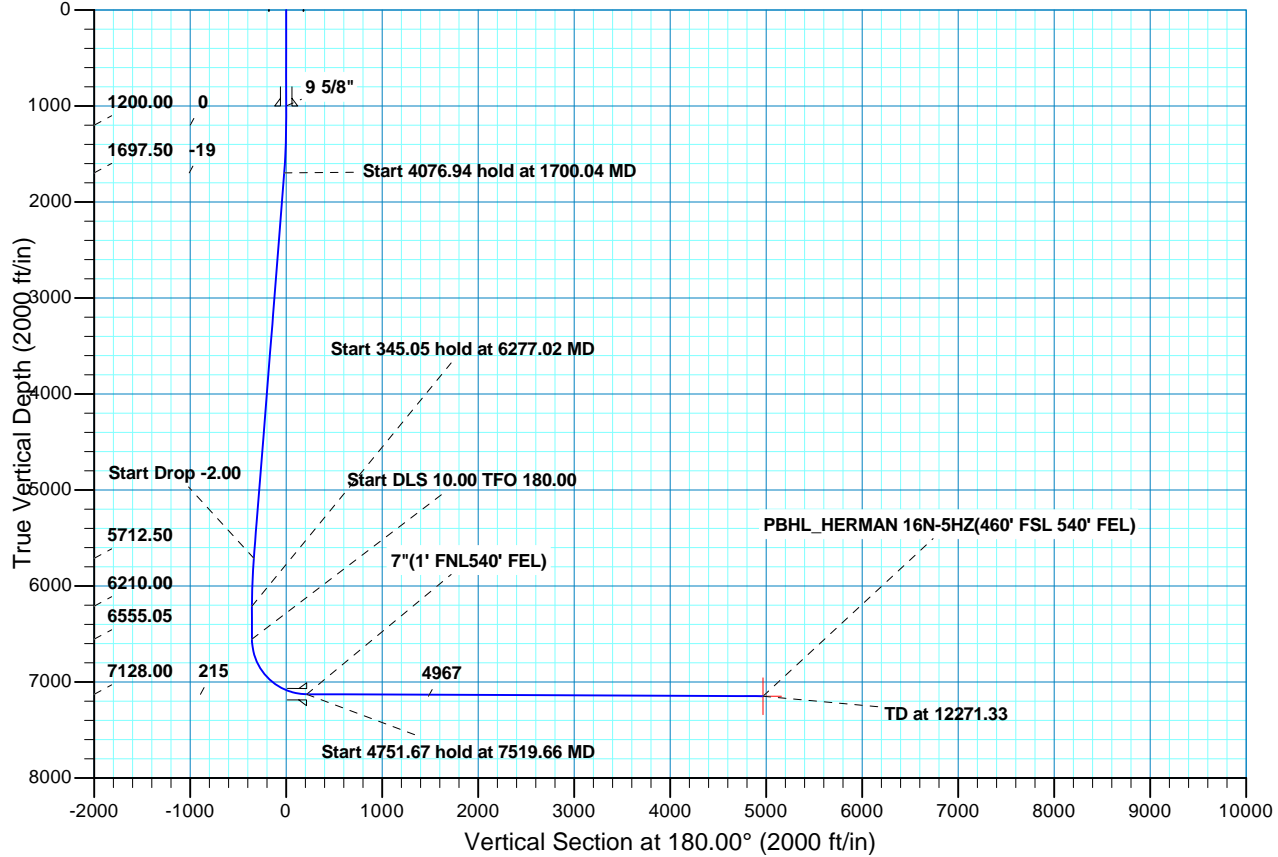
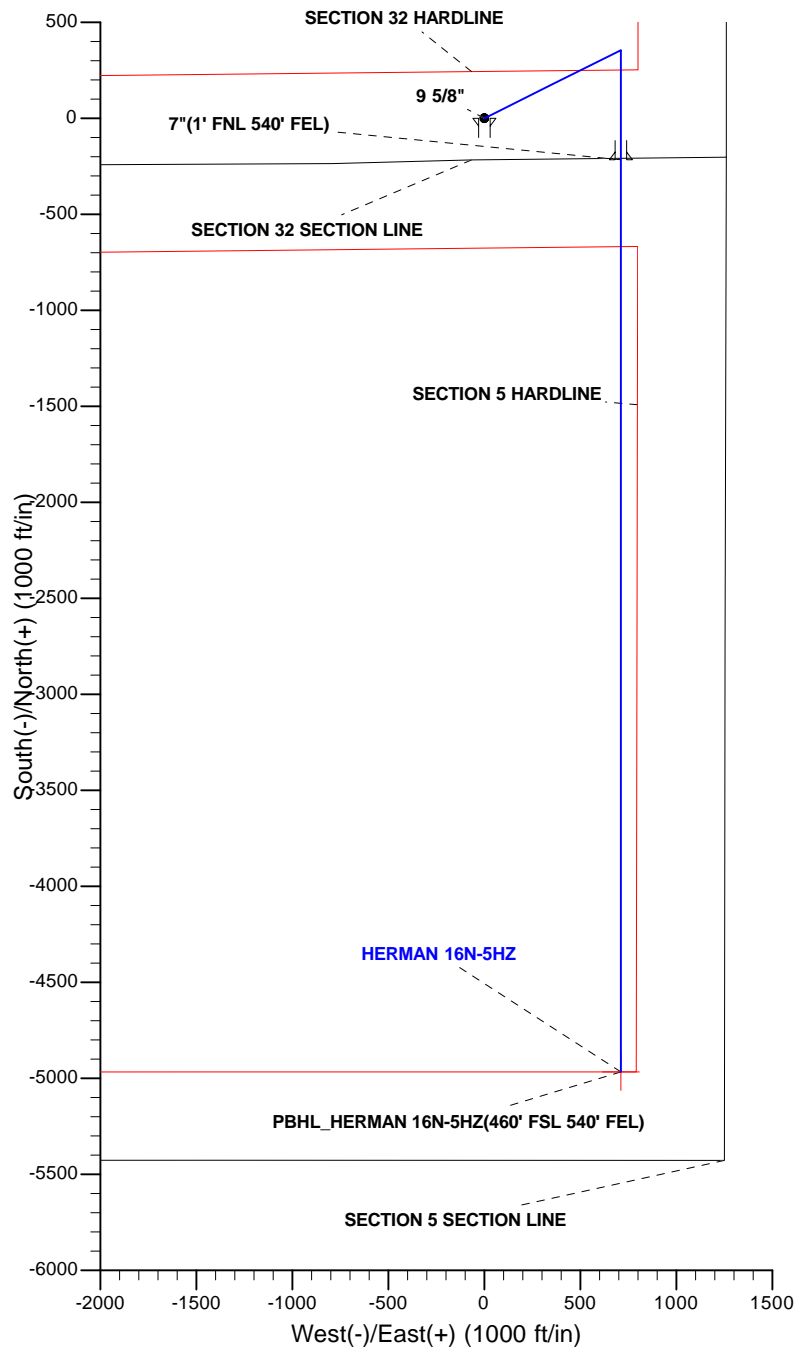


WELL DETAILS: HERMAN 16N-5HZ									
GL 4871' & KB 17' @ 4888.00ft (ASSUMED)									
	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude			
	0.00	0.00	1307281.99	3196681.58	40.1747420	-104.7961400			
SECTION DETAILS									
MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	Vsect	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1200.00	0.00	0.00	1200.00	0.00	0.00	0.00	0.00	0.00	0.00
1700.04	10.00	63.46	1697.50	19.45	38.94	2.00	63.46	-19.45	
5776.98	10.00	63.46	5712.50	335.76	672.36	0.00	0.00	-335.76	
6277.02	0.00	0.00	6210.00	355.21	711.31	2.00	180.00	-355.21	
6622.07	0.00	0.00	6555.05	355.21	711.31	0.00	0.00	-355.21	
7519.66	89.76	180.00	7128.00	-215.34	711.31	10.00	180.00	215.34	
12271.33	89.76	180.00	7148.00	-4966.96	711.31	0.00	0.004966.96		PBHL_HERMAN 16N-5HZ(460' FSL 540' FEL)
FORMATION TOP DETAILS					CASING DETAILS				
TVDPath	MDPath	Formation	Inc	TVD	MD	Name	Size		
679.00	706.00	Fox Hills	0.00	1000.00	1000.00	9 5/8"	9.625		
3967.00	4031.97	Parkman	10.00	7128.00	7519.66	7"	7.000		
4356.00	4426.97	Sussex	10.00						
6968.00	7123.69	Sharon Springs	50.16						
7046.00	7268.95	Niobrara A	64.69						
7069.00	7329.65	Niobrara B	70.76						





# Scientific Drilling

## **US ROCKIES REGION PLANNING**

**COLORADO NORTHERN ZONE - 83**

**HERMAN 37N-5HZ PAD**

**HERMAN 16N-5HZ**

**OH**

**Plan: PLAN #1 PRELIMINARY**

## **Standard Planning Report**

**16 April, 2013**

<b>Database:</b>	EDM5000-RobertS-Local	<b>Local Co-ordinate Reference:</b>	Well HERMAN 16N-5HZ
<b>Company:</b>	US ROCKIES REGION PLANNING	<b>TVD Reference:</b>	GL 4871' & KB 17' @ 4888.00ft (ASSUMED)
<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>MD Reference:</b>	GL 4871' & KB 17' @ 4888.00ft (ASSUMED)
<b>Site:</b>	HERMAN 37N-5HZ PAD	<b>North Reference:</b>	True
<b>Well:</b>	HERMAN 16N-5HZ	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	PLAN #1 PRELIMINARY		

<b>Project</b>	COLORADO NORTHERN ZONE - 83, KERR MCGEE OIL & GAS ONSHORE LP		
<b>Map System:</b>	US State Plane 1983	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	North American Datum 1983		
<b>Map Zone:</b>	Colorado Northern Zone		

<b>Site</b>	HERMAN 37N-5HZ PAD, SECTION 32 T3N R66W				
<b>Site Position:</b>	<b>Northing:</b>	1,307,281.91 usft	<b>Latitude:</b>	40.1747440	
<b>From:</b>	Lat/Long	<b>Easting:</b>	3,196,577.63 usft	<b>Longitude:</b>	-104.7965120
<b>Position Uncertainty:</b>	0.00 ft	<b>Slot Radius:</b>	13.200 in	<b>Grid Convergence:</b>	0.45 °

<b>Well</b>	HERMAN 16N-5HZ, 216' FSL 1260' FEL					
<b>Well Position</b>	<b>+N/-S</b>	-0.74 ft	<b>Northing:</b>	1,307,281.99 usft	<b>Latitude:</b>	40.1747420
	<b>+E/-W</b>	103.95 ft	<b>Easting:</b>	3,196,681.58 usft	<b>Longitude:</b>	-104.7961400
<b>Position Uncertainty</b>		0.00 ft	<b>Wellhead Elevation:</b>		<b>Ground Level:</b>	4,871.00 ft

<b>Wellbore</b>	OH				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	BGGM2012	2013/04/15	8.67	66.77	52,720

<b>Design</b>	PLAN #1 PRELIMINARY			
<b>Audit Notes:</b>				
<b>Version:</b>	<b>Phase:</b>	PLAN	<b>Tie On Depth:</b>	0.00
<b>Vertical Section:</b>	<b>Depth From (TVD) (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Direction (°)</b>
	0.00	0.00	0.00	180.00

<b>Plan Sections</b>										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,200.00	0.00	0.00	1,200.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,700.04	10.00	63.46	1,697.50	19.45	38.94	2.00	2.00	0.00	63.46	
5,776.98	10.00	63.46	5,712.50	335.76	672.36	0.00	0.00	0.00	0.00	
6,277.02	0.00	0.00	6,210.00	355.21	711.31	2.00	-2.00	0.00	180.00	
6,622.07	0.00	0.00	6,555.05	355.21	711.31	0.00	0.00	0.00	0.00	
7,519.66	89.76	180.00	7,128.00	-215.34	711.31	10.00	10.00	20.05	180.00	
12,271.33	89.76	180.00	7,148.00	-4,966.96	711.31	0.00	0.00	0.00	0.00	PBHL_HERMAN 16N

<b>Database:</b>	EDM5000-RobertS-Local	<b>Local Co-ordinate Reference:</b>	Well HERMAN 16N-5HZ
<b>Company:</b>	US ROCKIES REGION PLANNING	<b>TVD Reference:</b>	GL 4871' & KB 17' @ 4888.00ft (ASSUMED)
<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>MD Reference:</b>	GL 4871' & KB 17' @ 4888.00ft (ASSUMED)
<b>Site:</b>	HERMAN 37N-5HZ PAD	<b>North Reference:</b>	True
<b>Well:</b>	HERMAN 16N-5HZ	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	PLAN #1 PRELIMINARY		

Planned Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00	
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00	
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00	
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00	
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00	
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00	
706.00	0.00	0.00	706.00	0.00	0.00	0.00	0.00	0.00	0.00	
<b>Fox Hills</b>										
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00	
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00	
<b>9 5/8"</b>										
1,100.00	0.00	0.00	1,100.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,200.00	0.00	0.00	1,200.00	0.00	0.00	0.00	0.00	0.00	0.00	
<b>Start Build 2.00</b>										
1,300.00	2.00	63.46	1,299.98	0.78	1.56	-0.78	2.00	2.00	0.00	
1,400.00	4.00	63.46	1,399.84	3.12	6.24	-3.12	2.00	2.00	0.00	
1,500.00	6.00	63.46	1,499.45	7.01	14.04	-7.01	2.00	2.00	0.00	
1,600.00	8.00	63.46	1,598.70	12.46	24.94	-12.46	2.00	2.00	0.00	
1,700.00	10.00	63.46	1,697.47	19.44	38.94	-19.44	2.00	2.00	0.00	
1,700.04	10.00	63.46	1,697.50	19.45	38.94	-19.45	2.00	2.00	0.00	
<b>Start 4076.94 hold at 1700.04 MD</b>										
1,800.00	10.00	63.46	1,795.95	27.20	54.47	-27.20	0.00	0.00	0.00	
1,900.00	10.00	63.46	1,894.43	34.96	70.01	-34.96	0.00	0.00	0.00	
2,000.00	10.00	63.46	1,992.91	42.72	85.55	-42.72	0.00	0.00	0.00	
2,100.00	10.00	63.46	2,091.39	50.48	101.08	-50.48	0.00	0.00	0.00	
2,200.00	10.00	63.46	2,189.87	58.24	116.62	-58.24	0.00	0.00	0.00	
2,300.00	10.00	63.46	2,288.35	66.00	132.16	-66.00	0.00	0.00	0.00	
2,400.00	10.00	63.46	2,386.83	73.75	147.69	-73.75	0.00	0.00	0.00	
2,500.00	10.00	63.46	2,485.31	81.51	163.23	-81.51	0.00	0.00	0.00	
2,600.00	10.00	63.46	2,583.79	89.27	178.77	-89.27	0.00	0.00	0.00	
2,700.00	10.00	63.46	2,682.27	97.03	194.30	-97.03	0.00	0.00	0.00	
2,800.00	10.00	63.46	2,780.75	104.79	209.84	-104.79	0.00	0.00	0.00	
2,900.00	10.00	63.46	2,879.23	112.55	225.38	-112.55	0.00	0.00	0.00	
3,000.00	10.00	63.46	2,977.71	120.31	240.91	-120.31	0.00	0.00	0.00	
3,100.00	10.00	63.46	3,076.19	128.07	256.45	-128.07	0.00	0.00	0.00	
3,200.00	10.00	63.46	3,174.67	135.82	271.99	-135.82	0.00	0.00	0.00	
3,300.00	10.00	63.46	3,273.15	143.58	287.52	-143.58	0.00	0.00	0.00	
3,400.00	10.00	63.46	3,371.63	151.34	303.06	-151.34	0.00	0.00	0.00	
3,500.00	10.00	63.46	3,470.12	159.10	318.60	-159.10	0.00	0.00	0.00	
3,600.00	10.00	63.46	3,568.60	166.86	334.13	-166.86	0.00	0.00	0.00	
3,700.00	10.00	63.46	3,667.08	174.62	349.67	-174.62	0.00	0.00	0.00	
3,800.00	10.00	63.46	3,765.56	182.38	365.21	-182.38	0.00	0.00	0.00	
3,900.00	10.00	63.46	3,864.04	190.13	380.74	-190.13	0.00	0.00	0.00	
4,000.00	10.00	63.46	3,962.52	197.89	396.28	-197.89	0.00	0.00	0.00	
4,031.97	10.00	63.46	3,994.00	200.37	401.25	-200.37	0.00	0.00	0.00	
<b>Parkman</b>										
4,100.00	10.00	63.46	4,061.00	205.65	411.82	-205.65	0.00	0.00	0.00	
4,200.00	10.00	63.46	4,159.48	213.41	427.35	-213.41	0.00	0.00	0.00	
4,300.00	10.00	63.46	4,257.96	221.17	442.89	-221.17	0.00	0.00	0.00	
4,400.00	10.00	63.46	4,356.44	228.93	458.43	-228.93	0.00	0.00	0.00	
4,426.97	10.00	63.46	4,383.00	231.02	462.62	-231.02	0.00	0.00	0.00	

<b>Database:</b>	EDM5000-RobertS-Local	<b>Local Co-ordinate Reference:</b>	Well HERMAN 16N-5HZ
<b>Company:</b>	US ROCKIES REGION PLANNING	<b>TVD Reference:</b>	GL 4871' & KB 17' @ 4888.00ft (ASSUMED)
<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>MD Reference:</b>	GL 4871' & KB 17' @ 4888.00ft (ASSUMED)
<b>Site:</b>	HERMAN 37N-5HZ PAD	<b>North Reference:</b>	True
<b>Well:</b>	HERMAN 16N-5HZ	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	PLAN #1 PRELIMINARY		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
<b>Sussex</b>									
4,500.00	10.00	63.46	4,454.92	236.69	473.96	-236.69	0.00	0.00	0.00
4,600.00	10.00	63.46	4,553.40	244.44	489.50	-244.44	0.00	0.00	0.00
4,700.00	10.00	63.46	4,651.88	252.20	505.04	-252.20	0.00	0.00	0.00
4,800.00	10.00	63.46	4,750.36	259.96	520.57	-259.96	0.00	0.00	0.00
4,900.00	10.00	63.46	4,848.84	267.72	536.11	-267.72	0.00	0.00	0.00
5,000.00	10.00	63.46	4,947.32	275.48	551.65	-275.48	0.00	0.00	0.00
5,100.00	10.00	63.46	5,045.80	283.24	567.18	-283.24	0.00	0.00	0.00
5,200.00	10.00	63.46	5,144.28	291.00	582.72	-291.00	0.00	0.00	0.00
5,300.00	10.00	63.46	5,242.76	298.76	598.26	-298.76	0.00	0.00	0.00
5,400.00	10.00	63.46	5,341.25	306.51	613.79	-306.51	0.00	0.00	0.00
5,500.00	10.00	63.46	5,439.73	314.27	629.33	-314.27	0.00	0.00	0.00
5,600.00	10.00	63.46	5,538.21	322.03	644.87	-322.03	0.00	0.00	0.00
5,700.00	10.00	63.46	5,636.69	329.79	660.40	-329.79	0.00	0.00	0.00
5,776.98	10.00	63.46	5,712.50	335.76	672.36	-335.76	0.00	0.00	0.00
<b>Start Drop -2.00</b>									
5,800.00	9.54	63.46	5,735.18	337.51	675.86	-337.51	2.00	-2.00	0.00
5,900.00	7.54	63.46	5,834.07	344.14	689.14	-344.14	2.00	-2.00	0.00
6,000.00	5.54	63.46	5,933.41	349.23	699.33	-349.23	2.00	-2.00	0.00
6,100.00	3.54	63.46	6,033.09	352.77	706.42	-352.77	2.00	-2.00	0.00
6,200.00	1.54	63.46	6,132.99	354.75	710.38	-354.75	2.00	-2.00	0.00
6,277.02	0.00	63.46	6,210.00	355.21	711.31	-355.21	2.00	-2.00	0.00
<b>Start 345.05 hold at 6277.02 MD</b>									
6,300.00	0.00	0.00	6,232.98	355.21	711.31	-355.21	0.00	0.00	0.00
6,400.00	0.00	0.00	6,332.98	355.21	711.31	-355.21	0.00	0.00	0.00
6,500.00	0.00	0.00	6,432.98	355.21	711.31	-355.21	0.00	0.00	0.00
6,600.00	0.00	0.00	6,532.98	355.21	711.31	-355.21	0.00	0.00	0.00
6,622.07	0.00	0.00	6,555.05	355.21	711.31	-355.21	0.00	0.00	0.00
<b>Start DLS 10.00 TFO 180.00</b>									
6,700.00	7.79	180.00	6,632.74	349.92	711.31	-349.92	10.00	10.00	0.00
6,800.00	17.79	180.00	6,730.14	327.80	711.31	-327.80	10.00	10.00	0.00
6,900.00	27.79	180.00	6,822.21	289.11	711.31	-289.11	10.00	10.00	0.00
7,000.00	37.79	180.00	6,906.17	235.02	711.31	-235.02	10.00	10.00	0.00
7,100.00	47.79	180.00	6,979.45	167.17	711.31	-167.17	10.00	10.00	0.00
7,123.69	50.16	180.00	6,995.00	149.30	711.31	-149.30	10.00	10.00	0.00
<b>Sharon Springs</b>									
7,200.00	57.79	180.00	7,039.85	87.63	711.31	-87.63	10.00	10.00	0.00
7,268.95	64.69	180.00	7,073.00	27.22	711.31	-27.22	10.00	10.00	0.00
<b>Niobrara A</b>									
7,300.00	67.79	180.00	7,085.51	-1.20	711.31	1.20	10.00	10.00	0.00
7,329.65	70.76	180.00	7,096.00	-28.93	711.31	28.93	10.00	10.00	0.00
<b>Niobrara B</b>									
7,400.00	77.79	180.00	7,115.05	-96.60	711.31	96.60	10.00	10.00	0.00
7,500.00	87.79	180.00	7,127.58	-195.68	711.31	195.68	10.00	10.00	0.00
7,519.66	89.76	180.00	7,128.00	-215.34	711.31	215.34	10.00	10.00	0.00
<b>Start 4751.67 hold at 7519.66 MD - 7"(1' FNL 540' FEL)</b>									
7,600.00	89.76	180.00	7,128.34	-295.68	711.31	295.68	0.00	0.00	0.00
7,700.00	89.76	180.00	7,128.76	-395.68	711.31	395.68	0.00	0.00	0.00
7,800.00	89.76	180.00	7,129.18	-495.68	711.31	495.68	0.00	0.00	0.00
7,900.00	89.76	180.00	7,129.60	-595.68	711.31	595.68	0.00	0.00	0.00
8,000.00	89.76	180.00	7,130.02	-695.68	711.31	695.68	0.00	0.00	0.00
8,100.00	89.76	180.00	7,130.45	-795.67	711.31	795.67	0.00	0.00	0.00
8,200.00	89.76	180.00	7,130.87	-895.67	711.31	895.67	0.00	0.00	0.00

<b>Database:</b>	EDM5000-RobertS-Local	<b>Local Co-ordinate Reference:</b>	Well HERMAN 16N-5HZ
<b>Company:</b>	US ROCKIES REGION PLANNING	<b>TVD Reference:</b>	GL 4871' & KB 17' @ 4888.00ft (ASSUMED)
<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>MD Reference:</b>	GL 4871' & KB 17' @ 4888.00ft (ASSUMED)
<b>Site:</b>	HERMAN 37N-5HZ PAD	<b>North Reference:</b>	True
<b>Well:</b>	HERMAN 16N-5HZ	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	PLAN #1 PRELIMINARY		

Planned Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
8,300.00	89.76	180.00	7,131.29	-995.67	711.31	995.67	0.00	0.00	0.00	
8,400.00	89.76	180.00	7,131.71	-1,095.67	711.31	1,095.67	0.00	0.00	0.00	
8,500.00	89.76	180.00	7,132.13	-1,195.67	711.31	1,195.67	0.00	0.00	0.00	
8,600.00	89.76	180.00	7,132.55	-1,295.67	711.31	1,295.67	0.00	0.00	0.00	
8,700.00	89.76	180.00	7,132.97	-1,395.67	711.31	1,395.67	0.00	0.00	0.00	
8,800.00	89.76	180.00	7,133.39	-1,495.67	711.31	1,495.67	0.00	0.00	0.00	
8,900.00	89.76	180.00	7,133.81	-1,595.67	711.31	1,595.67	0.00	0.00	0.00	
9,000.00	89.76	180.00	7,134.23	-1,695.67	711.31	1,695.67	0.00	0.00	0.00	
9,100.00	89.76	180.00	7,134.65	-1,795.67	711.31	1,795.67	0.00	0.00	0.00	
9,200.00	89.76	180.00	7,135.07	-1,895.66	711.31	1,895.66	0.00	0.00	0.00	
9,300.00	89.76	180.00	7,135.50	-1,995.66	711.31	1,995.66	0.00	0.00	0.00	
9,400.00	89.76	180.00	7,135.92	-2,095.66	711.31	2,095.66	0.00	0.00	0.00	
9,500.00	89.76	180.00	7,136.34	-2,195.66	711.31	2,195.66	0.00	0.00	0.00	
9,600.00	89.76	180.00	7,136.76	-2,295.66	711.31	2,295.66	0.00	0.00	0.00	
9,700.00	89.76	180.00	7,137.18	-2,395.66	711.31	2,395.66	0.00	0.00	0.00	
9,800.00	89.76	180.00	7,137.60	-2,495.66	711.31	2,495.66	0.00	0.00	0.00	
9,900.00	89.76	180.00	7,138.02	-2,595.66	711.31	2,595.66	0.00	0.00	0.00	
10,000.00	89.76	180.00	7,138.44	-2,695.66	711.31	2,695.66	0.00	0.00	0.00	
10,100.00	89.76	180.00	7,138.86	-2,795.66	711.31	2,795.66	0.00	0.00	0.00	
10,200.00	89.76	180.00	7,139.28	-2,895.66	711.31	2,895.66	0.00	0.00	0.00	
10,300.00	89.76	180.00	7,139.70	-2,995.65	711.31	2,995.65	0.00	0.00	0.00	
10,400.00	89.76	180.00	7,140.12	-3,095.65	711.31	3,095.65	0.00	0.00	0.00	
10,500.00	89.76	180.00	7,140.55	-3,195.65	711.31	3,195.65	0.00	0.00	0.00	
10,600.00	89.76	180.00	7,140.97	-3,295.65	711.31	3,295.65	0.00	0.00	0.00	
10,700.00	89.76	180.00	7,141.39	-3,395.65	711.31	3,395.65	0.00	0.00	0.00	
10,800.00	89.76	180.00	7,141.81	-3,495.65	711.31	3,495.65	0.00	0.00	0.00	
10,900.00	89.76	180.00	7,142.23	-3,595.65	711.31	3,595.65	0.00	0.00	0.00	
11,000.00	89.76	180.00	7,142.65	-3,695.65	711.31	3,695.65	0.00	0.00	0.00	
11,100.00	89.76	180.00	7,143.07	-3,795.65	711.31	3,795.65	0.00	0.00	0.00	
11,200.00	89.76	180.00	7,143.49	-3,895.65	711.31	3,895.65	0.00	0.00	0.00	
11,300.00	89.76	180.00	7,143.91	-3,995.65	711.31	3,995.65	0.00	0.00	0.00	
11,400.00	89.76	180.00	7,144.33	-4,095.65	711.31	4,095.65	0.00	0.00	0.00	
11,500.00	89.76	180.00	7,144.75	-4,195.64	711.31	4,195.64	0.00	0.00	0.00	
11,600.00	89.76	180.00	7,145.17	-4,295.64	711.31	4,295.64	0.00	0.00	0.00	
11,700.00	89.76	180.00	7,145.60	-4,395.64	711.31	4,395.64	0.00	0.00	0.00	
11,800.00	89.76	180.00	7,146.02	-4,495.64	711.31	4,495.64	0.00	0.00	0.00	
11,900.00	89.76	180.00	7,146.44	-4,595.64	711.31	4,595.64	0.00	0.00	0.00	
12,000.00	89.76	180.00	7,146.86	-4,695.64	711.31	4,695.64	0.00	0.00	0.00	
12,100.00	89.76	180.00	7,147.28	-4,795.64	711.31	4,795.64	0.00	0.00	0.00	
12,200.00	89.76	180.00	7,147.70	-4,895.64	711.31	4,895.64	0.00	0.00	0.00	
12,271.33	89.76	180.00	7,148.00	-4,966.96	711.31	4,966.96	0.00	0.00	0.00	
TD at 12271.33 - PBHL_HERMAN 16N-5HZ(460' FSL 540' FEL)										

Design Targets										
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude	
PBHL_HERMAN 16N-5H - hit/miss target - Shape - Point	0.00	0.00	7,148.00	-4,966.96	711.31	1,302,320.84	3,197,432.29	40.1611070	-104.7935950	

<b>Database:</b>	EDM5000-RobertS-Local	<b>Local Co-ordinate Reference:</b>	Well HERMAN 16N-5HZ
<b>Company:</b>	US ROCKIES REGION PLANNING	<b>TVD Reference:</b>	GL 4871' & KB 17' @ 4888.00ft (ASSUMED)
<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>MD Reference:</b>	GL 4871' & KB 17' @ 4888.00ft (ASSUMED)
<b>Site:</b>	HERMAN 37N-5HZ PAD	<b>North Reference:</b>	True
<b>Well:</b>	HERMAN 16N-5HZ	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	PLAN #1 PRELIMINARY		

Casing Points					
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (in)	Hole Diameter (in)	
1,000.00	1,000.00	9 5/8"	9.625	12.250	
7,519.66	7,128.00	7"(1' FNL540' FEL)	7.000	7.500	

Formations					
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
706.00	679.00	Fox Hills			
4,031.97	3,967.00	Parkman			
4,426.97	4,356.00	Sussex			
7,123.69	6,968.00	Sharon Springs			
7,268.95	7,046.00	Niobrara A			
7,329.65	7,069.00	Niobrara B			

Plan Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment	
		+N/-S (ft)	+E/-W (ft)		
1,200.00	1,200.00	0.00	0.00	Start Build 2.00	
1,700.04	1,697.50	19.45	38.94	Start 4076.94 hold at 1700.04 MD	
5,776.98	5,712.50	335.76	672.36	Start Drop -2.00	
6,277.02	6,210.00	355.21	711.31	Start 345.05 hold at 6277.02 MD	
6,622.07	6,555.05	355.21	711.31	Start DLS 10.00 TFO 180.00	
7,519.66	7,128.00	-215.34	711.31	Start 4751.67 hold at 7519.66 MD	
12,271.33	7,148.00	-4,966.96	711.31	TD at 12271.33	